



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,321	01/23/2004	Ching-Wei Chang	J-SLA.1397	8179
55428	7590	02/04/2008		
ROBERT VARITZ 4915 SE 33RD PLACE PORTLAND, OR 97202			EXAMINER LEE, TOMMY D	
			ART UNIT 2625	PAPER NUMBER
			MAIL DATE 02/04/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p>10/764,321</p>	<p>Applicant(s)</p> <p>CHANG, CHING-WEI</p>	
	<p>Examiner</p> <p>Thomas D. Lee</p>	<p>Art Unit</p> <p>2625</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10 and 11 is/are rejected.
- 7) ☒ Claim(s) 7-9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/23/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because it is not limited to a single paragraph and it exceeds 150 words in length. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,621,545 (Motta et al., hereinafter Motta).

Regarding claims 1-4, Wong discloses a vector error diffusion (VED) method employable in cycles with respect to a bi-tonal color printing engine which prints bi-tonal

color images in a device output color space, said method, with respect to each cycle, comprising: acquiring input color-image data which is characterized with an input color space (source image data in RGB color space converted to source image data in LAB color space (column 5, lines 27-33)); processing, with available pre-established VED accumulated error data, such input data to produce a VED-processed input color-image data stream (source image defined in LAB space adjusted in response to accumulated error vectors in error diffusion process (column 5, lines 59-65)); from such VED-processed input color-image data stream, creating, without employing interpolation, a VED-processed output color-image data stream which is characterized by the mentioned device output color space, and which is suitable for delivery to and use by the mentioned printing engine (adjusted image data undergoes a LAB/CMY conversion (column 5, line 66 – column 6, line 14), no mention of interpolation employment in LAB/CMY converter (column 7, lines 9-25)); and changing, as appropriate for the next cycle, the VED accumulated error data which will be employed in that next cycle as pre-established VED accumulated error data (color error vector distributed to subsequently processed neighboring pixels (column 6, lines 45-65)). The method further comprises, at the conclusion of each cycle, delivering the associated output color-image data stream to the printing engine (image data delivered to CMY printer (Fig. 1)). The input, and the device output, color spaces are different, wherein the input color space is L,a,b color space, and the device output color space employed is C,M,Y color space (source image data provided in LAB color space (column 5, lines 27-33), output on CMY printer (column 8, lines 16-22)).

5. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,072,591 (Harrington).

Regarding claim 10, Harrington discloses a vector error diffusion (VED) method employable in cycles with respect to a bi-tonal color printing engine which prints bi-tonal color images in a device output color space, said method, with respect to each cycle, comprising: acquiring input color-image data which is characterized with an input color space (image data from image source in C,M,Y color space (Fig. 2)); and from such acquired input data, creating a VED-processed output color-image data stream which is characterized by the mentioned device output color space (color image vector error diffusion performed (column 5, lines 10-17; Fig. 2)), and as a part of said creating, utilizing a threshold luminosity value to declare all pixels residing on one side of that threshold value to be white pixels, and all pixels residing on the other side of the threshold value to be other than white pixels (values of C, M and Y summed to decide between white and non-white pixels (column 5, lines 25-43); if sum is less than ONE, then no pixel is printed (Fig. 3)).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Motta as applied to claim 1 above, and further in view of Harrington.

8. Motta does not disclose utilizing a threshold luminosity value on one side of which all associated pixels are declared to be white, and on the other side of which, all pixels are declared to have a color which is other than white. This limitation is taught by Harrington (values of C, M and Y summed to decide between white and non-white pixels (column 5, lines 25-43); if sum is less than ONE, then no pixel is printed (Fig. 3)). Harrington notes that in the standard error diffusion process, noise arises in part because white pixels occur where color pixels should occur (column 5, lines 30-32). One of ordinary skill in the art would have been motivated to modify the teaching of Motta by providing a step of summing the color values and comparing the summation with a threshold value to determine whether or not a pixel should be printed, as taught by Harrington, so as to reduce or eliminate such noise.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Motta in view of Harrington, and further in view of U.S. Patent 5,561,751 (Wong).

10. Regarding claim 11, Motta discloses a vector error diffusion (VED) method employable in cycles with respect to a bi-tonal color printing engine which prints bi-tonal color images in a device output color space, said method, with respect to each cycle, comprising: acquiring input color-image data which is characterized with an input color space (source image data in RGB color space converted to source image data in LAB color space (column 5, lines 27-33)); generating, relative to and specific for such an engine, an output-selection color-value data palette which correlates for primary colors in the device output color space, specific input color-space pixel color values with device output-color-space pixel color values that have been predetermined for image

printing by the engine (LAB/CMY converter is a color lookup table for mapping LAB input color values to CMY color values (column 7, lines 9-17)); and employing that data palette, and from the acquired input data, creating a VED-processed output color-image data stream in which individual pixels are described in terms of device output-color-space color values, and wherein said employing involves (a) comparing input pixel values to determine the closest match with output pixel values in the palette, and (b) selecting for output delivery from the palette to the printing engine the "closest-distance" output pixel values (closest LAB coordinates determined in terms of Euclidean distance (column 7, lines 18-25)).

11. Motta does not disclose correlation, for other than white, and for secondary colors, of the color value data palette. However, as mentioned above with respect to claim 5, Harrington discloses, in a vector error diffusion process, summing values of C, M and Y to decide between white and non-white pixels (column 5, lines 25-43). One of ordinary skill in the art would have been motivated to provide this feature in the teaching of Motta prior to employment of the LAB/CMY converter, so as to eliminate noise which may otherwise be generated when white pixels occur where color pixels should occur, as mentioned above. Also, while Motta is only able to print primary colors, Harrington further provides for the printing of primary and secondary colors (Figs. 3-5). Wong also teaches the printing of primary and secondary colors in a vector error diffusion process, and further provides a color lookup table for mapping the input colors to the primary and secondary output colors (Fig. 3; column 8, lines 21-44; column 9, lines 9-26). One of ordinary skill in the art would have been motivated to provide for the output of

secondary colors in the LAB/CMY converter of Motta, so that a more accurate reproduction of the image may be realized, since more output colors are available for printing.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Motta as applied to claim 1 above, and further in view of U.S. Patent 5,561,751 (Wong).

13. Motta includes employing a color-value data/palette containing color values based upon device output-color-space-determined values for the primary colors which the printing engine is capable of printing (LAB/CMY converter is a color lookup table for mapping LAB input color values to CMY color values (column 7, lines 9-17)). While secondary colors are not included in Motta's lookup table, such colors are included in Wong's color lookup table, as mentioned above with respect to claim 11 (Fig. 3). One of ordinary skill in the art would have been motivated to provide for the output of secondary colors in the LAB/CMY converter of Motta, so that a more accurate reproduction of the image may be realized, since more output colors are available for printing.

Allowable Subject Matter

14. Claims 7-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter: No prior art has been found to disclose or suggest "employing, in the mentioned color-value data/palette, additional, fictional color values based upon device output

Application/Control Number:
10/764,321
Art Unit: 2625

Page 8

color-space-selected values for arbitrary C', M' and Y' colors which lie at vector distances that are intermediate the primary C, M and Y colors and white," as recited in claim 7, and as similarly recited in claim 8.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Lee whose telephone number is (571) 272-7436. The examiner can normally be reached on Monday-Friday, 7:30-5:00, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on (571) 272-7402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/764,321
Art Unit: 2625

Page 9

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Thomas D Lee
Primary Examiner
Technology Division 2625

tdl
January 31, 2008